tives, they give better results than the majority of Huyghenian eye-pieces.

We close the book, nevertheless, feeling that it will be an acquisition to many who are without information, and want it, as to how to use the microscope.

A Sketch of Geological History, being the Natural History of the Earth and of its Pre-Human Inhabitants. By Edward Hull, M.A., LL.D., F.R.S. (London: C. W. Deacon and Co., 1887.)

IN a prefatory note the publishers of this little book inform the readers that it constitutes the first of a series of volumes devoted to a "Sketch of Universal History." We must congratulate the publishers on having discovered an author with sufficient knowledge, and at the same time with the necessary courage, for coping with such an undertaking. In 148 small pages we have a description of the "original condition of the globe" when it first assumed its present form, followed by sketches of the Archæan and succeeding periods of the earth's history; the whole concluding with a retrospect, which reads like the moral of a fable. The work, it is believed, will form an appropriate introduction to three similar volumes in which the modern history of the world is sketched. The book before us is a marvel of condensation; but in reading it we feel like the unfortunate individuals who are compelled to support life on lozenges composed of "Liebig's Extract."

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.*

Politics and the Presidency of the Royal Society.

I THINK that you have done the scientific world a great service in pointing out, in language to which it seems to me no one can take exception, the inconveniences which may arise from the President of the Royal Society occupying a seat in Parliament.

No one will, I think, contest the fact that the Royal Society occupies a unique place in our social organization. It differs from all other Societies in constitution, temperament, and tradition. To persons unacquainted with its working, its method of procedure often seems deliberate and formal to a fault. To those who take part in its work it is obvious that its intellectual freedom is absolutely unrestrained, and that, subject to such mistakes as no human institution can claim exemption from, its impartiality and independence of judgment are absolutely unfettered. This arises from the fact that it is a picked body of men of the most diverse mental attitudes, who owe their association to nothing but their own exertions, and who are in the habit of expressing themselves with the utmost frankness on subjects of common interest discussed amongst themselves.

With the general body of Fellows the Council, from the rapidity with which it is changed, is in constant touch. It is no great assumption, then, to conclude that the Council when it speaks will have behind it the approval of the Fellows—that is, in point of fact, the sanction of the general scientific opinion of the Empire.

Now, the President of the Royal Society, when he speaks officially, is something more than the President of a learned Society: he is virtually the Speaker of the English scientific world. This being so, his position appears to me to be no small one. It is one which in emergencies may become of paramount importance. And it is this view of his position which disposes me to think that it is desirable that the occupant of such a post should be politically unfettered. I apprehend that this view is shared by Prof. Balfour Stewart when he says: "I grant freely that under ordinary circumstances it is undesirable that the President of the Royal Society should enter the House of Commons." And it is not difficult to see why it is undesirable.

Successive Governments, as is well known, are in the habit of consulting the Royal Society on scientific questions, the solution of which may possibly influence or determine a public policy. To such appeals the Royal Society has hitherto replied to the best of its ability without fear or favour. Will it always have the same freedom when its President is amenable to party discipline? It is only necessary to point to the last session of Parliament to see that there were many occasions when the position of the President on the Government benches would have been a not wholly pleasant one. Much bebadgered Ministers would perhaps have come up to him and have said, You must really make some concession, and the man would be made of iron who would not sometimes yield. Then, having been squeezed himself, he would return to his Council with:—"In the House of Commons the other night a very strong opinion was expressed to me," &c., and the process of squeezing would be transferred to the Council. It is no use saying that these things would not happen; because everyone knows that in actual political life they do. If the President descends from the dignified reserve which hedges him in at Burlington House, he will have to take his chance with the disabilities of the ordinary Parliamentary rank and file.

I cannot therefore resist the conclusion that a President of the Royal Society owes it to himself and to his position to hold aloof from all influences that would impair his freedom, and, as a consequence, that of the Society. His position is one of the few in the country which is unique not merely from its absolute independence of external public influence, but from the sanction which is given to the action of its occupant by internal support. The impossibility of allowing the Judges to sit in the House of Commons is, I suppose, apparent to everyone, and, in my view, every disability in that respect which attaches to them attaches with equal force to the President.

I will only trespass on your space with two further observations.

Prof. Balfour Stewart's last argument is, of course, purely political, and, being so, appears to me to be the one thing needed to demonstrate the unadvisability of any exception to the general principle to which he adheres. He says that the President "has chosen to be an Englishman first and a man of science afterwards." Yes. But—and I trust that no shade of impropriety may be thought to attach to the argument—would he have been as equally acquiescent had the President chosen the political *rôle* of Irishman as his first duty?

Lastly, Prof. Williamson remarks that our President cannot "be supposed to have entered the House as the political representative of the Royal Society." But unfortunately he cannot help himself. He cannot sink his official status. The House of Commons will take note of it just as it does of that of the Lord Mayor and of the Chairman of the Metropolitan Board of Works, who do not sit in Parliament by virtue of their official positions. Yet, being there, they are liable to interpellations with respect to the business of the bodies over which they preside. I do not see why the President of the Royal Society should expect immunity from the same discipline, and the result, it is easy to see, might be extremely embarrassing to the Royal Society, which has other, and in my opinion more constitutional, modes of communicating with the Government, and, if need be, with Parliament.

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I say these things not because I like saying them, but because, feeling as I do, I do not think I ought to abstain from saying them. No one has a higher admiration for our President than I have, and no one would less willingly utter a syllable that would give him pain. I rejoice in one aspect of the case, that the University of Cambridge has crowned a great scientific career by a signal honour. But I cannot but feel that the authority and position of the Presidency of the Royal Society belong to a sphere of action infinitely above the conflict of parties, and that they will run a serious risk of impairment when the honoured name of its occupant appears for the first time in modern scientific history in the lists of a party division.

W. T. Thiselton Dyer.

Royal Gardens, Kew, November 26, 1887.

As a Fellow of the Royal Society who has sat for many years continuously in the House of Commons, I have read with much interest your article on the above subject, which, from a Royal Society point of view (but not in any sense from a Parliamentary stand-point) is one of very great importance. No reasonable person would for a moment object, I presume, to Prof. Stokes entering Parliament as a politician, if he be one, provided he be very careful to doff at the door of the House of Parliament every vestige of Royal Society representation, and appear there as a private politician to be taken for just what he is worth in that capacity, and no more. Do not let me be misunderstood : as a man of science he will, even in the House of Commons, receive the personal consideration due to his distinguished personal attainments ; and few public assemblies are more ready than that House to give the full value to personal qualities and achievements. But the President of the Royal Society will put that distinguished body, no less than himself, in a thoroughly false position if he presumes to utter there a single sentence in its name. Should I be present—and the same may be said, I trust, of other Fellows—I shall not hesitate to rise instantly and disclaim his pretensions, and declare that he has no more authority than one of the doorkeepers to speak in a political assembly in the name of the Society over which in a purely scientific capacity he presides.

Having a most careful regard to the purity of your columns in respect of everything merely political, I find it very difficult to say much of what I think and feel on this question ; but when I consider the depths to which a certain ex-Professor has descended since he seated himself upon the steep and slippery slope of politics, I must very earnestly deprecate any similar proceeding on the part of the highest officer of the Royal Society, in that capacity. In the political arena, I fear, we are on both sides daily getting a lower and lower opinion of our opponents, and I must confess that it is rapidly becoming hard to reconcile with the scientific spirit the rancorous abuse and unreasoning misrepresentation with which we are now too familiar.

But I must not be drawn into either polemics or personality. I must content myself with saying, that, if Conservatives think meanly of Liberal politicians just now, their sentiment is thoroughly reciprocated, and probably more than reciprocated, by those who, like myself, believe we have at heart the true greatness, the lasting tranquillity and the intellectual and social progress of the country. For Heaven's sake let us keep the Royal Society, if not above, at least most distinctly apart from, all political contentions ; and, in order that we may do this, let its President, who has now become a professed party politician, either vacate the chair, or make it absolutely clear that on the floor of Parliament he will not presume to speak with any kind or degree of authority in the name of the Society.

I have no idea, Sir, of your political views, but I appreciate your desire to keep the Royal Society politically neutral—aye, politically non-existent—and I hope your timely and courageous warning will not have been given in vain.

I have no care to conceal my name, but the end in view may be best promoted, perhaps, by my merely signing myself,

F.R.S. and M.P.

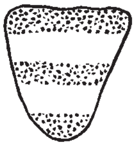
Library of House of Commons, November 21.

The Vitreous State of Water.

To-day, between 2 and 3 p.m., with the barometer standing at 29 inches, the thermometer a little below 0° C., and the wind north-east, we had for the space of about twenty minutes an interesting fall of hail in this neighbourhood. The stones varied in size from that of a mustard-seed to that of a hemp-seed or thereabouts. Some rain accompanied them, and this became frozen in part on cold exposed surfaces. The stone sill of my study window, which faces nearly north-west, was soon covered in this way with a thin pellicle of ice, which served as a convenient resting-place for the hailstones at a low temperature. I was struck at once with their glassy appearance, and examined a number of them with a pocket lens as they lay on the cold surface of the stone, not having at hand any refrigerating arrangement adjustable to the stage of a microscope. Nor was the latter necessary. The lens showed most distinctly the clear transparency of the glass of which these hailstones consisted, and the vitreous fracture of some which had been broken by impact. Watching them as they lay, one saw minute nests of crystals form, in some cases in a peripheral zone, extending gradually inwards ; but in the majority of instances the crystallization began in the centre of the ice, and gradually extended in a beautiful crystal growth more or less through the mass.

There would seem to be no room left for doubt that this crystal-building process (sometimes in bands, sometimes in confused nests of crystals) was a simple case of devitrification—as distinct a case, one may almost say, as the well-known devitrification on a larger scale which is clearly exhibited by some glassy slags. The fact of lying on a surface below 0° C., and undergoing devitrification instead of liquefaction, seems to lend direct support to the theory of *latent heat of the vitreous state*, which I have ventured elsewhere to propound (see Nature, vol. xxxvi. p. 77).

I may add that last July, in a much heavier hailstorm in the Trent Valley, I noticed a very great number of hailstones, many of them as large as a moderate-sized hazel-nut, and peg-top shaped, with a zonal or banded structure thus :—



The layers or zones were alternately transparent and opaque (apparently crystalline), but in this case the temperature caused them to melt away without allowing a good opportunity for observation of any devitrification of the glassy portions. To-day Nature has performed the experiment suggested in my previous letter, and the result is found to accord with the theory.

A. Irving.

Wellington College, Berks, November 18.

The Bagshot Beds.

It may interest some of your readers to know that I recently obtained some casts of fossils from the Bagshot Sands of the Newbury district, from which, with one doubtful exception ("Survey Memoir," vol. iv. p. 330), they have not, I believe, hitherto been recorded. The fossils are of the nature of ferruginous casts, and were found in a sand-pit about one-third of a mile south-east of the London lodge of Highclere Park, mapped by the Survey as Lower Bagshot. They consist both of univalves and bivalves, and four or five genera are represented. They resemble, both in appearance and mode of occurrence, the fossils found in the Upper Bagshot of the Bagshot district ; and the sands in which they occur have a strong resemblance to the

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